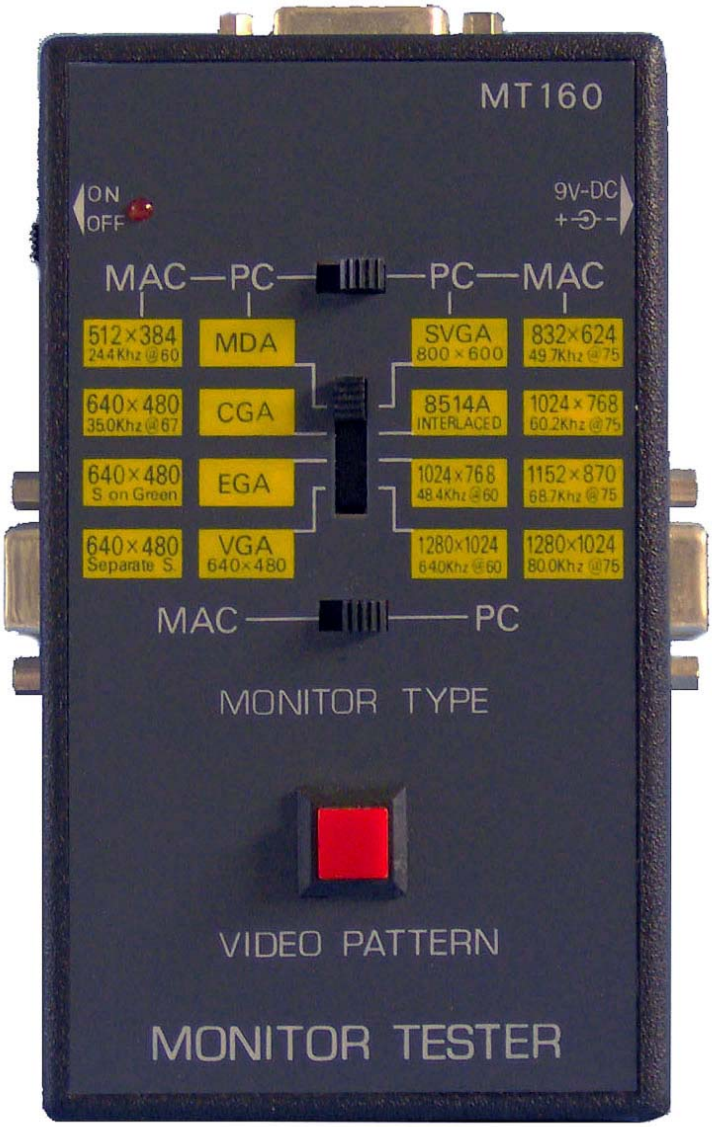
GME

MT160 Video Monitor Tester

User's Manual

Rev 1.2



TEST INSTRUMENT SAFETY GUIDELINES

WARNING

An electrical shock of over 10 milliamps of current to pass through the heart will stop most human heartbeats. Voltage as low as 35 volts dc or ac rms should be considered dangerous and hazardous since it can produce a lethal current under certain conditions. Be sure to observe following safety precautions:

1. Do not expose high voltage needlessly in the equipment under test. Remove housings and covers only when necessary. Turn off equipment while making test connections in high-voltage circuits. Discharge high-voltage capacitors after removing power.

2. If possible, familiarize yourself with the equipment being tested and the location of its high voltage points. However, remember that high voltage may appear at unexpected points in defective equipment.

3. Use an insulated floor material or a large, insulated floor mat to stand on, and an insulated work surface on which to place equipment; make certain such surfaces are not damp or wet.

4. When using a probe, touch only the insulated portion. Never touch the exposed tip portion.

5. When testing ac powered equipment, remember that ac line voltage is usually present on some power input circuits such as the on-off switch, fuses, power transformer, etc. any time the equipment is connected to an ac outlet, even if the equipment is turned off.

Limited One-Year Warranty

GME Technology warrants to the original purchaser that this product and the component parts thereof, will be free from defects in workmanship and materials for a period of one years from the data of purchase. GME Technology will, without charge, repair or replace, at its' option, defective product or component parts. Returned product must be accompanied by proof of the purchase date in the form a sales receipt.

Term and Conditions

- The warranty period is based upon the invoice date of the original purchase by the end-user.
- Warranty only applies to defects in materials and/or workmanship, which occur during normal use.
- Warranty does not apply to those products that are damaged due to misuse, abuse, negligence or modification.
- Warranty does not extend to any damage that occurs in shipment or due to natural phenomenon (i.e. lightning or line surges).
- Warranty will be voided if the original serial number on the product is removed by accident or intentionally

This warranty gives you specific rights and you may have other rights, which vary from state-to-state.

Service & Repair

The following are procedure for returning a GME product for servicing and repair. Turn around time for repair is normally within five (5) working days excluding shipping time.

RMA Procedure
Before sending your GME product in for service, be sure to contact GME Technology first to obtain a RMA number. If your product is still under warranty, please send in the product along with a copy of the receipt showing the date when the product was purchased. If the warranty has already expired, please ask for the repair cost when you contact GME Technology for the RMA number and include a check or money order for the repair cost when you send in the product.

Please make check payable to: GME Technology

You may send your GME product to our service & repair department at:

GME Technology
ATTN: Service & Repair Department
380 S. East End Ave., #H
Pomona, CA 91766

Be sure to include a note showing your RMA number, your name, telephone number, return address, and a description of the problem with the product.

For the most recent support information, please visit GME Technology website at
www.gmetechnology.com/support

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Introduction

Thank you for purchasing the MT160 video monitor tester. This is an easy-to-use handheld video monitor tester that generates a wide variety of test patterns for comprehensive testing, calibration, and repair PC & Mac computer monitors and other video equipments. The MT-160 delivers the quality and functionality you would expect from an expensive high end video monitor tester at a very affordable price. The MT160 features a wide range of testing resolutions ranging from 640x350 to 1280x1024. The video patterns generated by the MT160 include Color Bars, Cross Hatch, Dot, Checker, and Raster. Three separate monitor connectors output eliminates the need for any additional adapter. With its easy to understand interface, the MT160 is designed to meet the need of people from all levels ranging from novice to video professionals.

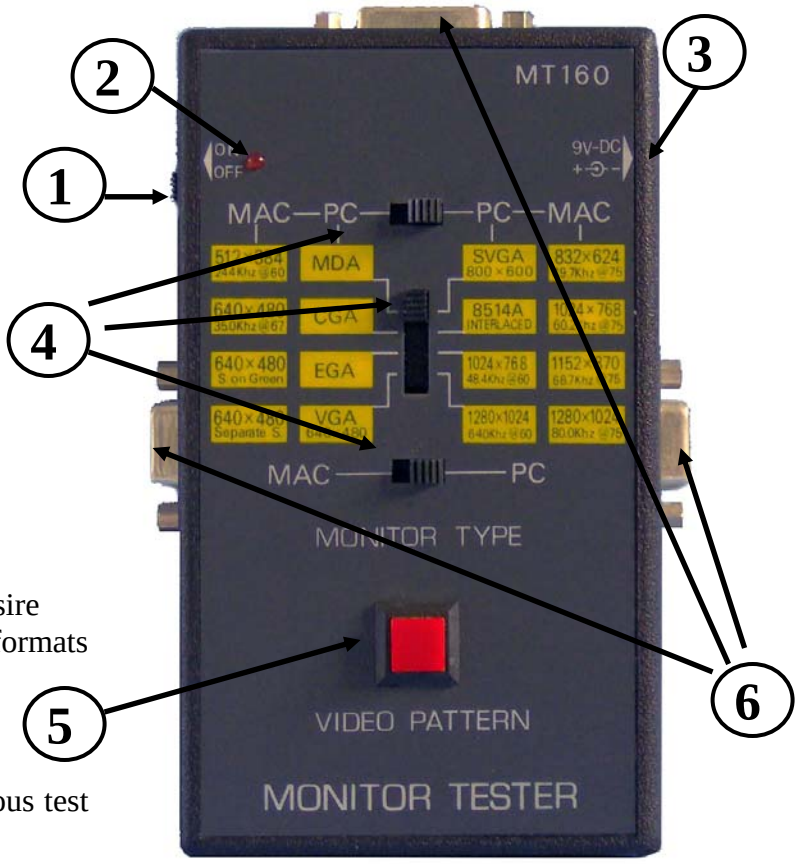
Item Checklist

- ✓ One MT160 Video Monitor Tester
- ✓ One User's Manual

Features

- ♦ Supports 16 computer monitor scanning modes (8 PC modes and 8 Mac modes)
- ♦ 17 total video test patterns including COLOR BARS, CROSS HATCH (choose from White, Red, Green, and Blue), DOT (choose from White, Red, Green, and Blue), CHECKER (choose from White, Red, Green, and Blue), and RASTER (choose from White, Red, Green, and Blue)
- ♦ Single push button selectable patterns with hold down reverse
- ♦ Three separate monitor connectors
- ♦ AC adaptor power source or standard 9V battery operation
- ♦ Ideal for on-the-bench and in-the-field testing
- ♦ Easy to use, lightweight, and portable

Understanding the Front Panel



1. *Power ON/OFF switch*

This Power ON/OFF switch is on the left side of the unit. Slide the switch upward to turn the unit on and downward to turn the unit off.

2. *Power ON/OFF LED*

Power is ON when the LED turns on and power is OFF when the LED is off.

3. *9V AC adaptor input*

The user may connect a 9V 100mA 5.5mm x 2.1mm **center positive** AC adaptor (not included) to power the unit.

4. *Scanning Format switches*

Use these three switches to choose the desire scanning format. The available scanning formats are printed on the front panel.

5. *Video Pattern button*

Use this button to cycle through the various test patterns.

NOTE: Holding down this button will display previous patterns in reverse order until COLOR BARS pattern is reached.

6. *Video Monitor Connectors*

Three separate video monitor connectors that fit various monitor types

Basic Operation

1. Choose the appropriate scanning format for the monitor or equipment wish to test using the three scanning format switches. Available scanning formats are conveniently printed on the front panel of the unit. Use the top switch to choose the formats on the left or right side of the panel. The middle switch chooses the row of scanning format for output. The bottom switch chooses between PC and MAC from the selection chosen by the other two switches.

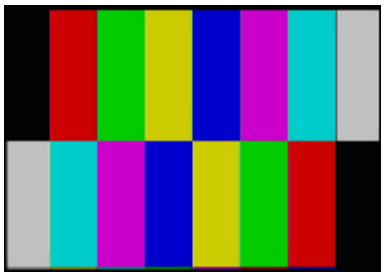
2. The MT160 has three monitor connectors: Digital/TTL9-D, Analog 15-HD and Analog 15-DB. Connect the appropriate monitor connector on the MT160 to the equipment wish to test.

3. Slide the power switch to turn on the MT160.

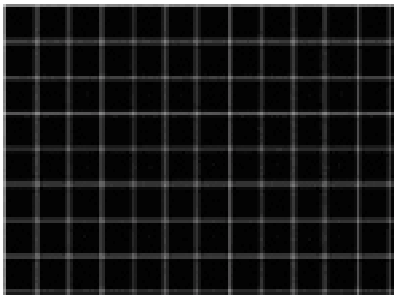
4. Push the video pattern button to step to the desire video pattern for display. Available video patterns include COLOR BARS, CROSS HATCH (choose from White, Red, Green, and Blue), DOT (choose from White, Red, Green, and Blue), CHECKER (choose from White, Red, Green, and Blue), and RASTER (choose from White, Red, Green, and Blue)

   **NOTE: Holding down the video pattern button will display previous patterns in reverse order until COLOR BARS pattern is reached

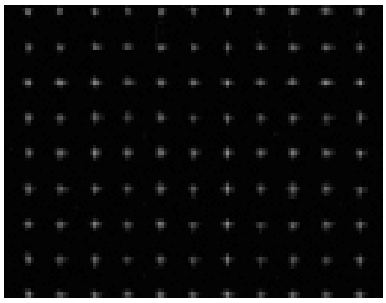
Video Patterns and Applications



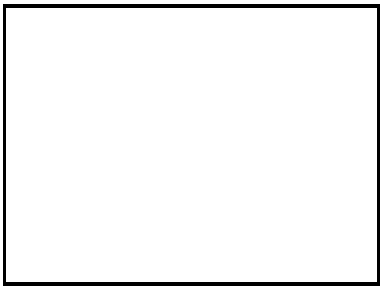
COLOR BARS



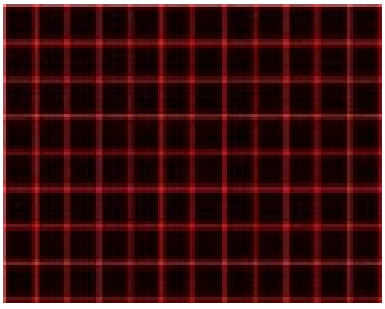
CROSS HATCH (White)



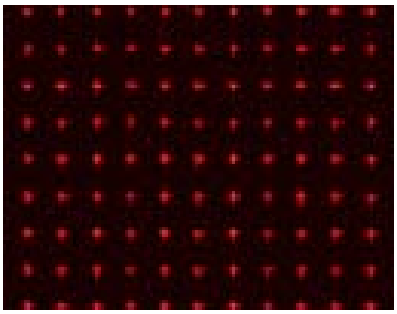
DOT (White)



RASTER (White)

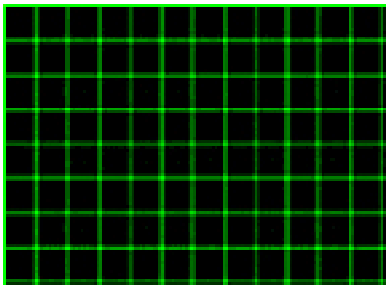


CROSS HATCH (Red)

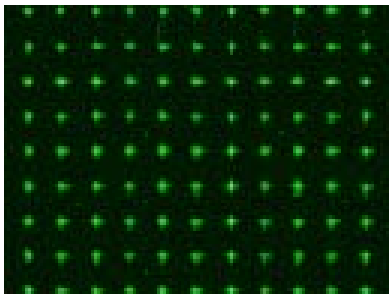


DOT (Red)

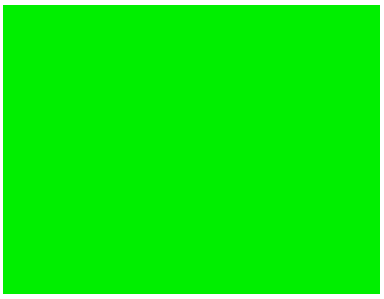
RASTER (Red)



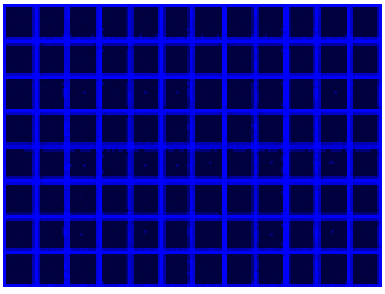
CROSS HATCH (Green)



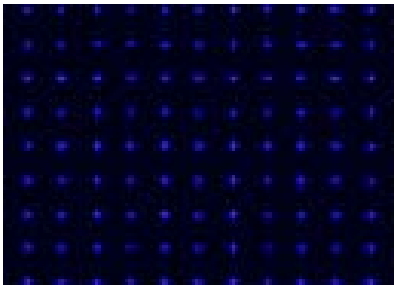
DOT (Green)



RASTER (Green)

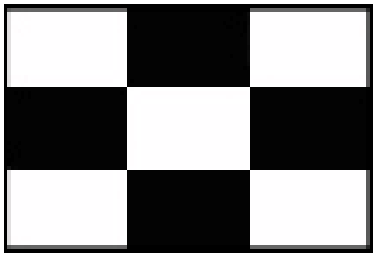


CROSS HATCH (Blue)

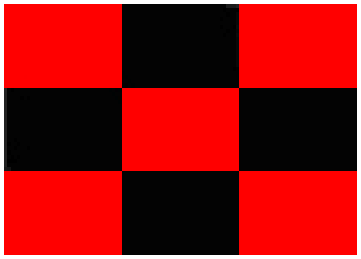


DOT (Blue)

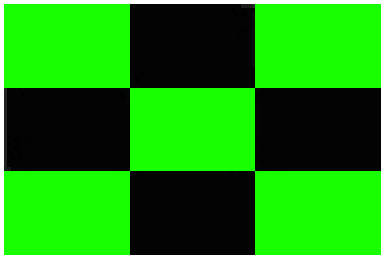
RASTER (Blue)



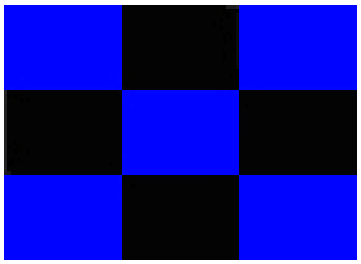
CHECKER (White)



CHECKER (Red)

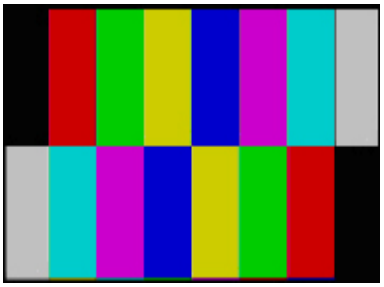


CHECKER (Green)



CHECKER (Blue)

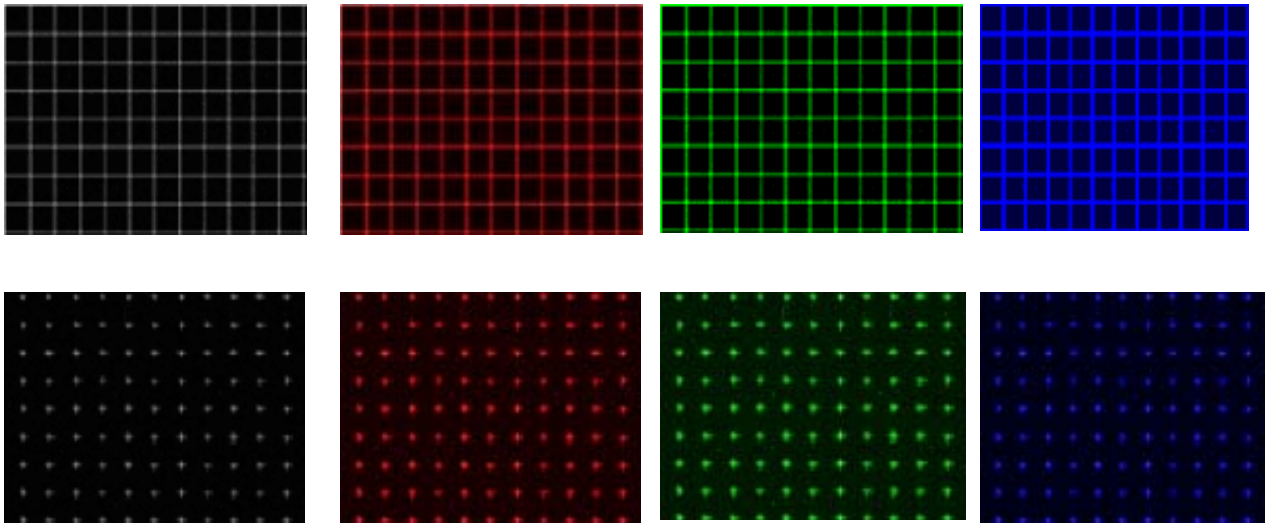
COLOR BARS



Eight equal width vertical color bars are displayed at 100% amplitude, 100% saturation in the order from left to right: White, Yellow, Cyan, Green, Magenta, Red, Blue, and Black.

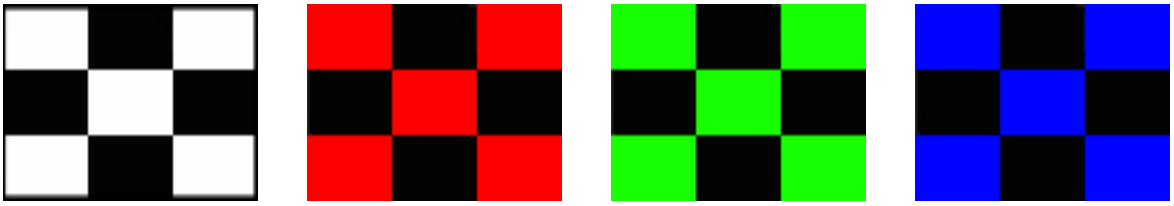
The COLOR BARS video pattern serves as the fundamental pattern used for most testing, troubleshooting and adjustments in video equipment. Use this test pattern to check and test the video device's ability to produce fully saturated primary and secondary colors. It is often used as the reference for color adjustment and compensation. When troubleshooting, analysis of the colors bars pattern helps television service personnel to pinpoint color related problem to specific circuits. This pattern can also be use as a reference for troubleshooting color amplifier or color demodulator problems inside the display device.

CROSS HATCH & DOT



The CROSS HATCH patterns display a series of horizontal and vertical straight white lines that forms a grid of 12 x 8 squares of the same size.
The CROSS HATCH patterns are used to check and adjust dynamic convergence of the display. Observe the horizontal and vertical lines to detect color fringing resulting from misconvergence. An example that the display is misconverged is when the white lines in the white CROSS HATCH pattern become separated Red, Green, and Blue lines. Adjust the display's RGB convergence control to align the colors to overlap so the horizontal and vertical lines appear as white lines.
This pattern can also provide a convenient reference for making vertical and horizontal linearity adjustments.
CROSS HATCH patterns are also useful for checking pincushion (bow) distortion and display geometry such as picture centering, size, and trapezoid (keystone) correction. For trapezoid correction, adjust the monitor display control so that the pattern's edges are parallel to the edges of the display screen. For pincushion correction, the horizontal and vertical lines should be adjusted to be straight.
The DOT patterns are preferred for checking static convergence. Static convergence is always performed before and after purity adjustments.

CHECKER

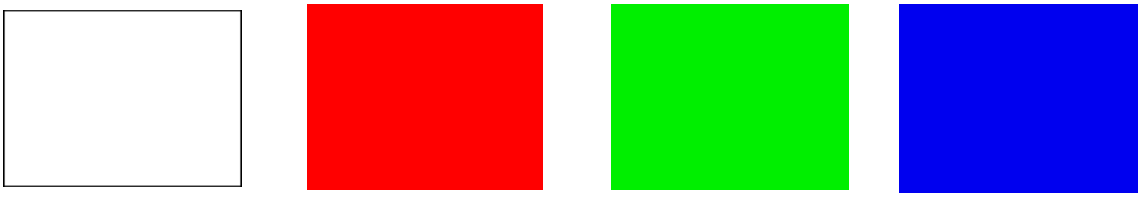


The CHECKER pattern displays alternating black and white/red/green/blue boxes as in a checker board.

This pattern is useful in checking the high voltage regulation of CRT power supply circuits. Poor regulation results in trapezoidal looking pattern. For CRT type monitors with insufficient power supply regulation can result in the corners of each box do not touch each other as they should. This effect can sometimes be reduced by lowering the brightness or contrast settings.

This pattern is also useful for checking ringing of the video signal as the signal transitions from black to white. The abrupt, maximum change in CRT video drive current produced by this pattern should not cause the voltage supplied to the video drive circuit to change in display device with good voltage regulation. For display device with power supply that does not have good regulation, softening or ringing in the pattern transitions can result.

RASTER



The RASTER patterns consist of 4 full field color patterns at 100% amplitude. The colors displayed are: White, Red, Green, and Blue.

RASTER patterns are useful for checking color purity and uniformity. Color purity problems are often caused by the magnetization of some parts inside a CRT display device. This often results in areas of color on the white raster pattern. Use the three primary color raster patterns (Red, Green, and Blue) to check for missing and defective pixels on a LCD monitor. Missing and defective pixels are common problems on this type of display devices.

The Red, Green, and Blue raster patterns are valuable for adjusting the three separate guns that generate these three primary colors inside a display monitor. A full field display of each of the four color RASTER patterns also simplifies the analysis of hue and saturation problems.

Specifications

PC Format Supported	MDA
	CGA
	EGA
	VGA (640x480)
	SVGA (800x600)
	8514A (1024x384)
	VESA (1024x768)
	VESA (1280x1024)
MAC Format Supported	512x384 (24.5khz @ 60)
	640 x 480 (35.0Khz @67 Composite Sync.)
	640 x 480 (Sync on Green)
	640 x 480 (Separate Sync)
	832 x 624 (49.7 KHz @75)
	1024 x 768 (60.2 KHz @75)
	1152 x 870 (68.7 KHz @ 75)
	1280 x 1024 (80.0 KHz @75)
Video Patterns	COLOR BARS
	CROSS HATCH (Choose from White, Red, Green, and Blue)
	DOT (Choose from White, Red, Green, and Blue)
	CHECKER (Choose from White, Red, Green, and Blue)
	RASTER (Choose from White, Red, Green, and Blue)
Video Monitor Connectors	Digital/TTL9-D
	Analog 15-HD
	Analog 15-DB
Power	one standard 9V battery OR
	9V AC adaptor (100mA, 5.5mmx2.1mm center positive)
Dimension	5.7"(H) x 3.8"(W) x 1.5"(D)
Weight	0.8 lb

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For product updates and information

CHECK OUT THESE OTHER TEST EQUIPMENT AVAILABLE FROM GME

GME offers many different types of electronic test equipment to suit your needs. Here are some of the test equipment products we offer.

Model	***Description***
HG139	HDTV Pattern Generator
SG-10	10 MHz DDS Signal Generator
236	In-Circuit ESR & DCR Capacitor Tester
PG-16A	NTSC & Monitor Tester (Handheld Model)
PG-68	NTSC & Monitor Tester (Benchtop Model)
PG-38	NTSC Pattern Generator
MT-160	Computer Monitor Tester
LC200	Digital LC Meter
C350	Capacitance Meter

Other products such as digital / analog panel meters, step motor drivers are also available. Please visit our website at **www.gmetechnology.com** for complete detail.

Notes

GME Technology

380 S. East End Ave. #H
Pomona, CA 91766

TEL: 909-865-1998
FAX: 909-865-2793

www.gmetechnology.com